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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/666,371	09/20/2000	Davi Geiger	24147.00	6163

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BAKER & BOTTS
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER

ABDULSELAM, ABBAS I

ART UNIT	PAPER NUMBER
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2674

13

DATE MAILED: 12/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/666,371

Applicant(s)

GEIGER ET AL.

Examiner

Abbas I Abdulsalam

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 September 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-40 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-40 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14, 34-36 and 38-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stytz et al. (USPN 5201035) in view of Blainey et al. (USPN 5797012) and Marks (USPN 5,748,844).

Regarding claims 1, 34 and 36, Stytz teaches segmentation of a three dimensional image along a plane or planes of interest. Stytz teaches algorithm for volume determination in connection with location in which cutting plane takes place. Stytz also teaches a three-dimensional array in which voxel values are stored and are described in terms of coordinates. Furthermore, Stytz teaches the use of storage of the display information with sufficient memory which is organized as units. Stytz teaches of node(11i) with their corresponding coordinates (11m) along with voxel value (11n) and voxel coordinates (11o). However, Stytz does not teach a graph structure that demonstrates nodes in terms of edges and the partitioning process. Blainey on the other hand teaches a computer program-generating multigraph having nodes expressed with respect to edges. Blainey also teaches a method of limiting group size in which the totality of node weight procedure is included in the partition. See Fig 3.

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Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Stytz's method of three dimensional data manipulation to include Blainey's computer programming and partitioning technique. One would have been motivated in view of Blainey that the computer programming along with partitioning technique provides the desired configurations of edges with respect to nodes and the partitioning process. The use of Blainey's computer programming and the partitioning process helps function a computer program involving data processing system as taught by Blainey.

Stytz has been described above. However, Stytz does not teach nodes that are partitioned into at least two groups by minimum cut algorithm. Marks on the other hand teaches as illustrated in Fig. 2 partitioning of a graph comprising a set of nodes and a set edges or links. Marks teaches an initial graph partition (Fig. 4) including picking up nodes to partition X (42), and picking up nodes to partition (Y) as well as a partition of the graph $\{x, y\}$, its cut-set size (54). See Fig. 4.

Therefore, it would have been obvious to one having skill in the art at the time the invention was made to modify Stytz's graphic presentation to adapt Marks' partitioning techniques as shown in Fig. 2 and Fig. 4. One would have been motivated in view of the suggestion in Marks that the partitioning steps as configured in Fig. 2 & Fig. 4 including assigning nodes to partition (x, y) are equivalent to the desired minimum cut algorithm.

In addition, Marks teaches and cites several studies that were conducted including a "minimum-cut placement algorithm" (col. 2, lines 36-37), and indicates that by grouping together nodes in tightly connected sub graphs, clusters of nodes can be treated as individual super nodes during an application of standard methods. See col. 2, lines 9-15.

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Regarding claims 2 and 8, Stytz teaches a step to determine and confirm the eight-image voxel coordinates belonging to the current Oct-tree leaf node have been generated. See col. 17, lines 34-37 and Fig 11a.

Regarding claims 3 and 10 Stytz teaches the voxel data model representing data elements with array values. See col. 4, lines 35-42.

Regarding claims 4, 9 and 11, Stytz teaches the object space partition in terms of neighborhood of points. See col. 5, lines 54-66.

Regarding claims 5-6 and 12-13, Stytz teaches the application of data array for cube structure. See col. 5, lines 47-66.

Regarding claims 7, and 14, See Stytz's teaches volume rendering algorithm, See Fig 10(5N) where N stands for dimension.

Regarding claims 38-39, Marks teaches partitioning process. See Fig. 4. Marks also disclose a system for computing an initial partition of graph comprising nodes and the edges that connect the nodes. See the abstract.

Regarding claim 40, Blainey teaches a method for partitioning programs into multi-procedure modules for efficient compilation. See the abstract.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 15-33, 35, 37 rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are:

Part of the independent claims 13, 35 and 37 state “receiving first data corresponding to at least one first point in the space, the first data for each one of the at least one first point including first information indicative of a likelihood of an association of the first data to at least a first part of the respective first point.” subsequently, the independent claims state “receiving second data corresponding to at least one second point in the space, the second data for each one of the at least one second point including second information indicative of a likelihood of an association of the second data to at least a second part of the respective second point.” In both cases, it is unclear and ambiguous as to what elements the phrase “likelihood of an association” is meant to associate. The claims have to be rewritten to more clearly reflect the relationship among “first data”, “first point” and “first information”. The same clarification is needed to reflect better relationship among elements, second data, second point and second information so that one of ordinary skill in the art would be able to ascertain the point.

Conclusion

3. The prior art made of record and not relied upon is considered to applicant's disclosure. The following arts are cited for further reference.

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U.S. Pat. No. 6,577,992 to Tcheniaev et al.

U.S. Pat. No. 6,594,624 to Curet

U.S. Pat. No. 6,499,137 to Hunt

U.S. Pat. No. 6,324,678 to Dangelo et al.

U.S. Pat. No. 6,301,694 to Lee et al.

4. Any inquiry concerning this communication or earlier communication from the examiner should be directed to **Abbas Abduselam** whose telephone number is **(703) 305-8591**. The examiner can normally be reached on Monday through Friday (9:00-5:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Richard Hjerpe**, can be reached at **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of patents and Trademarks

Washington, D.C. 20231

or faxed to:

(703) 872-9314

Hand delivered responses should be brought to Crystal Park II, Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology center 2600 customer Service office whose telephone number is (703) 306-0377.

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Abbas Abdulsalam

Examiner

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12/12/2003



RICHARD M. STEPE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2003